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Arrington, III

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(54) **MULTI-ACCOUNT ACCESS CARD**

(75) Inventor: **Curtis Howell Arrington, III**, San Antonio, TX (US)

(73) Assignee: **United Services Automobile Association (USAA)**, San Antonio, TX (US)

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G06K 19/00 (2006.01)

(52) **U.S. Cl.** **235/487**; 235/493

(58) **Field of Classification Search** 235/449, 235/493, 487, 492, 494
See application file for complete search history.

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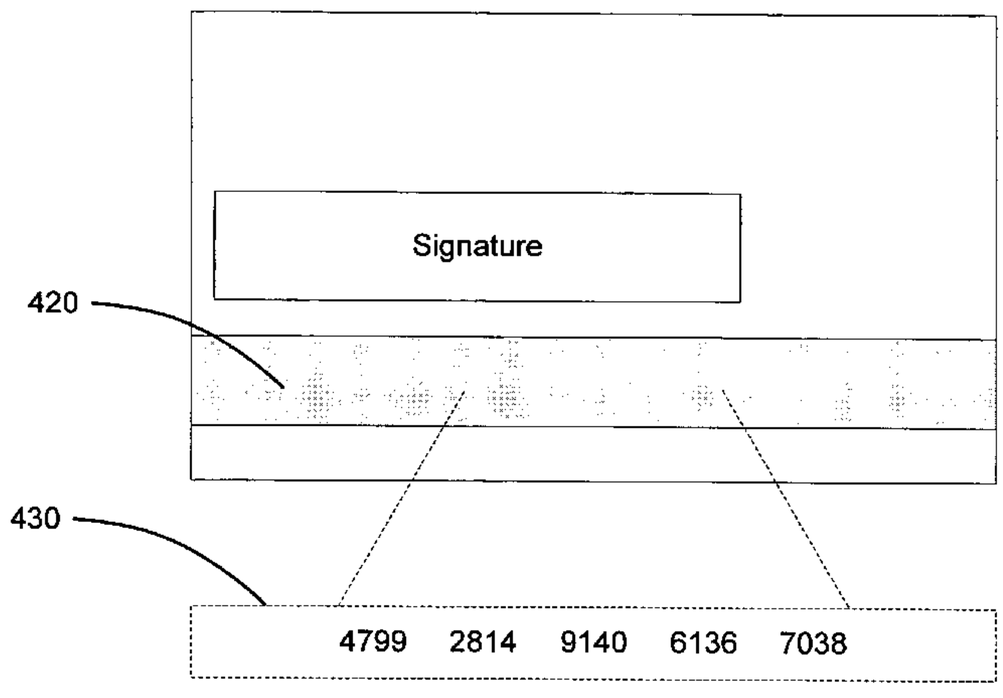
Primary Examiner—Daniel A Hess
Assistant Examiner—Paultep Savusdiphol

(57) **ABSTRACT**

The described embodiments contemplate a system, method, apparatus, and computer-readable medium with computer-executable instructions for accessing multiple accounts. The apparatus may be an interactive access card and/or portable electronic device that includes a memory component for storing data associated with multiple accounts, an input component for selecting an account, and a processing component for retrieving data associated with the selected account. The apparatus also may be an access card that includes a rectangular shaped substrate and an interface component for storing data associated with multiple accounts. The apparatus also may be an electronic reader that includes an interface component for reading an access card, a software component for identifying the accounts stored on the access card, an input component for selecting an account, and a processing component for accessing a database associated with the selected account, transmitting data associated with the selected account, and completing a transaction.

23 Claims, 8 Drawing Sheets



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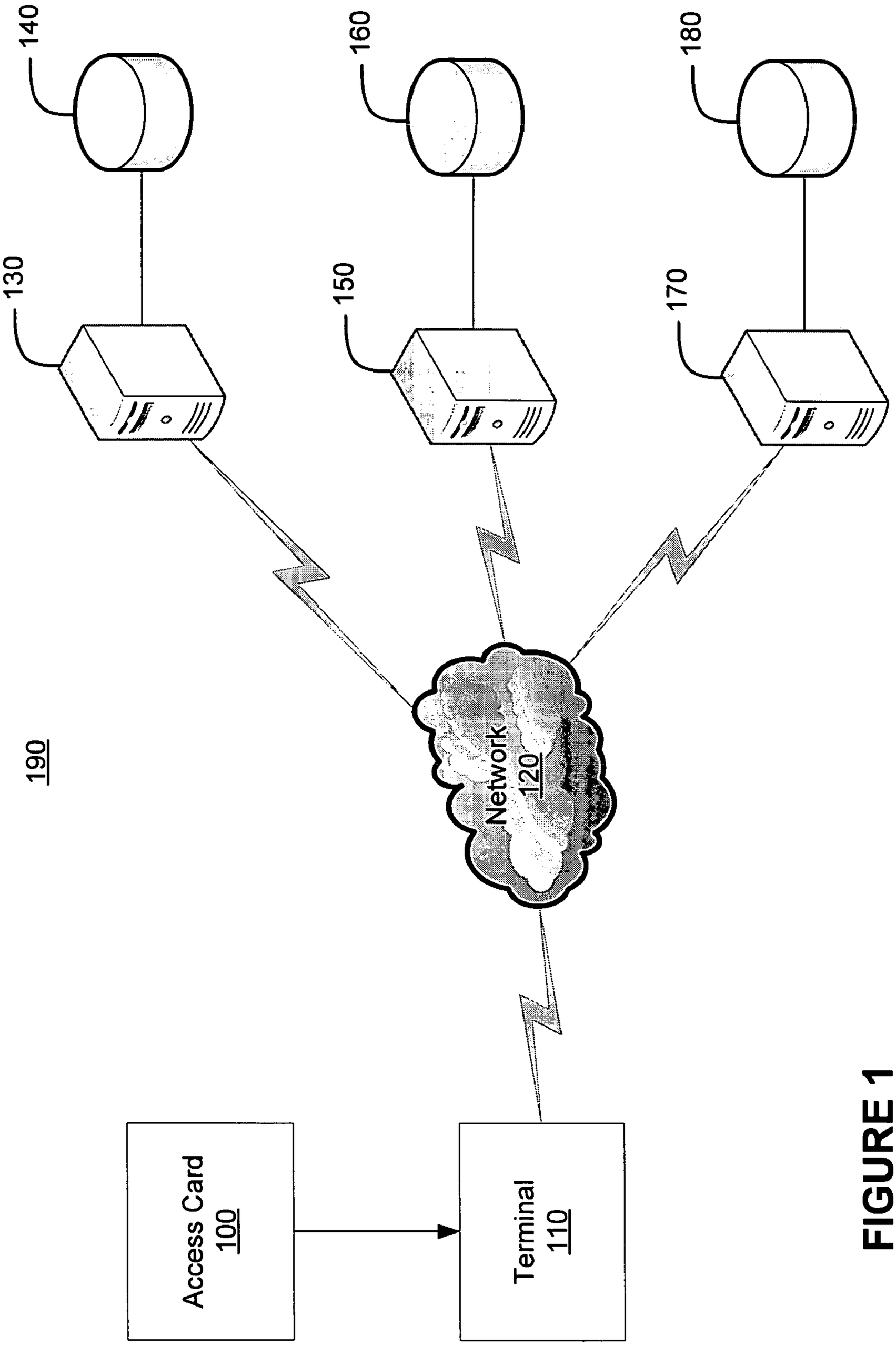
140
160
180
130
150
170
190
Network
120
Access Card
100
Terminal
110

FIGURE 1

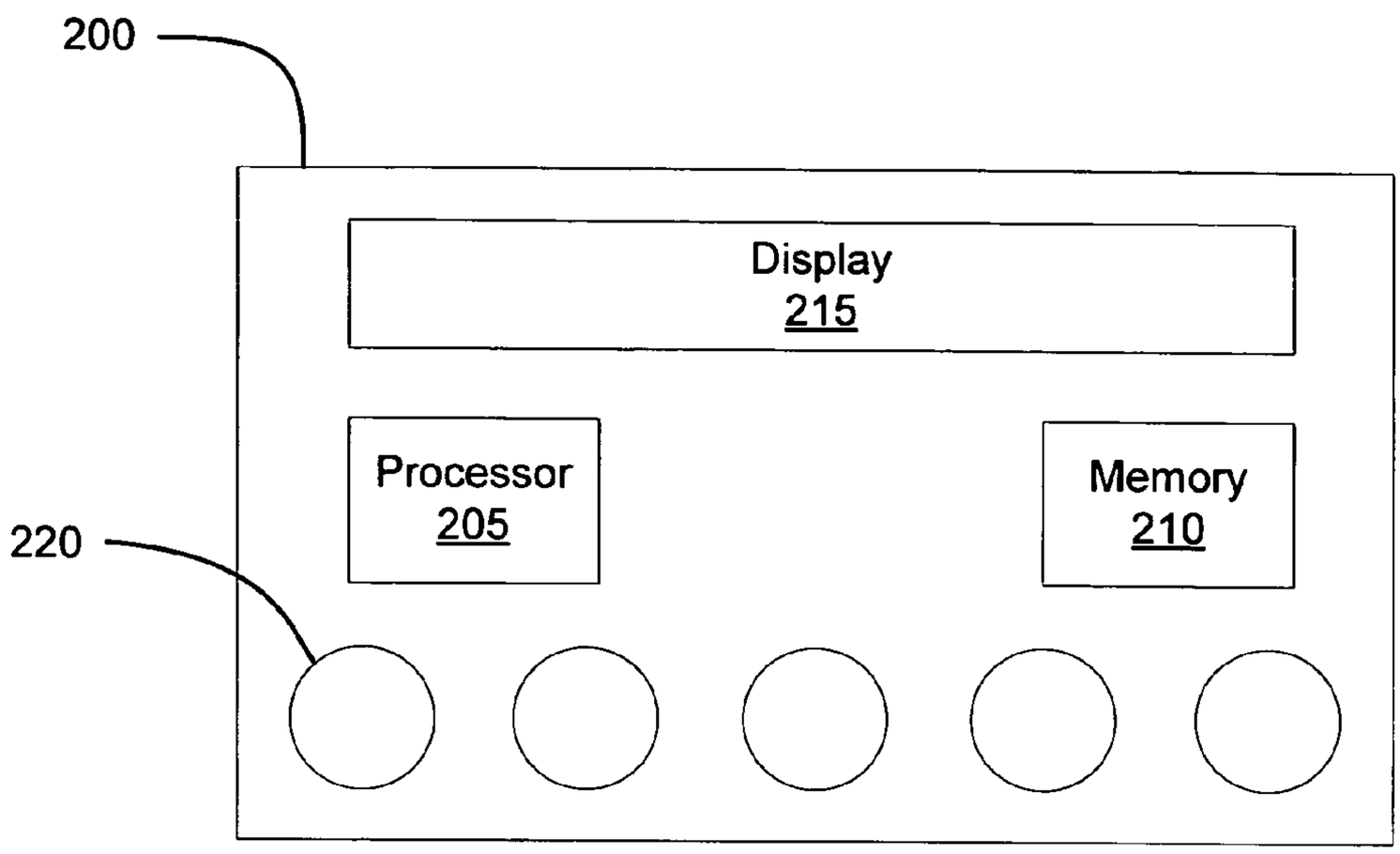

FIGURE 2A

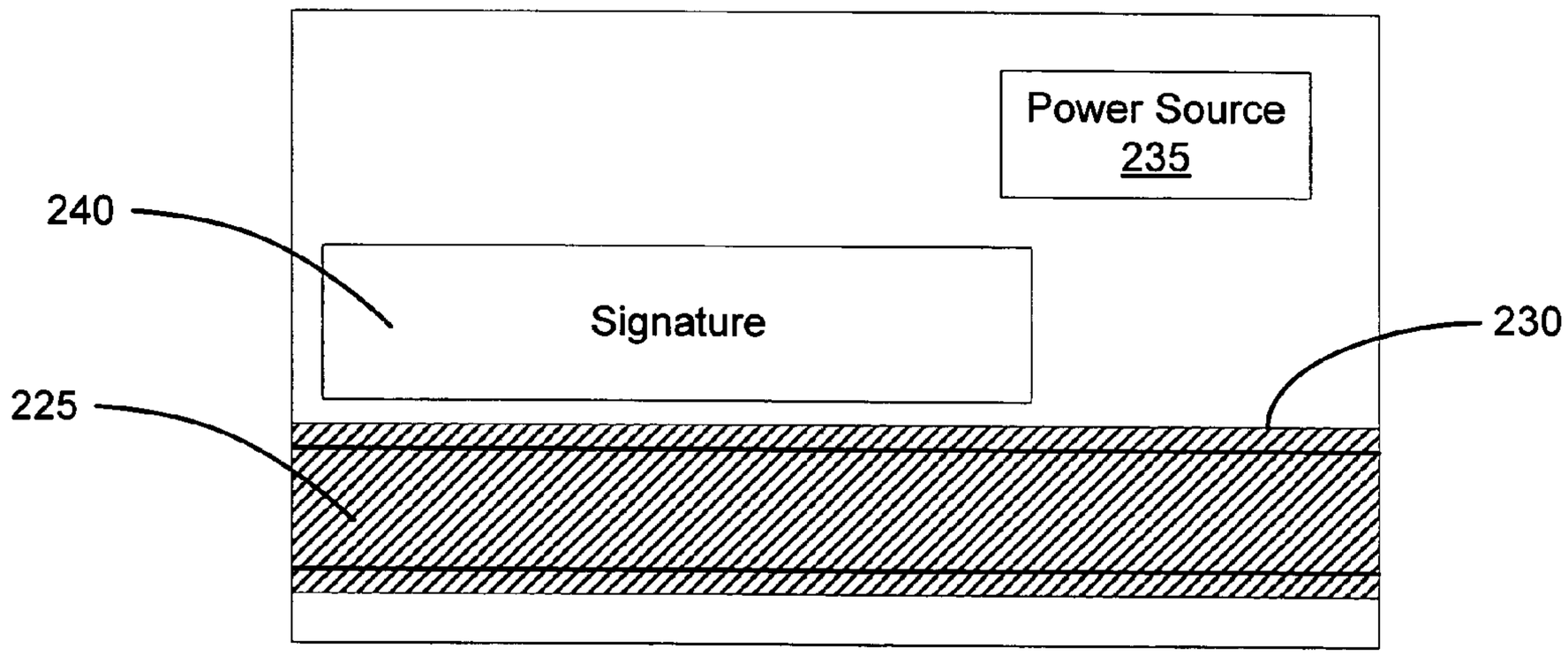

FIGURE 2B

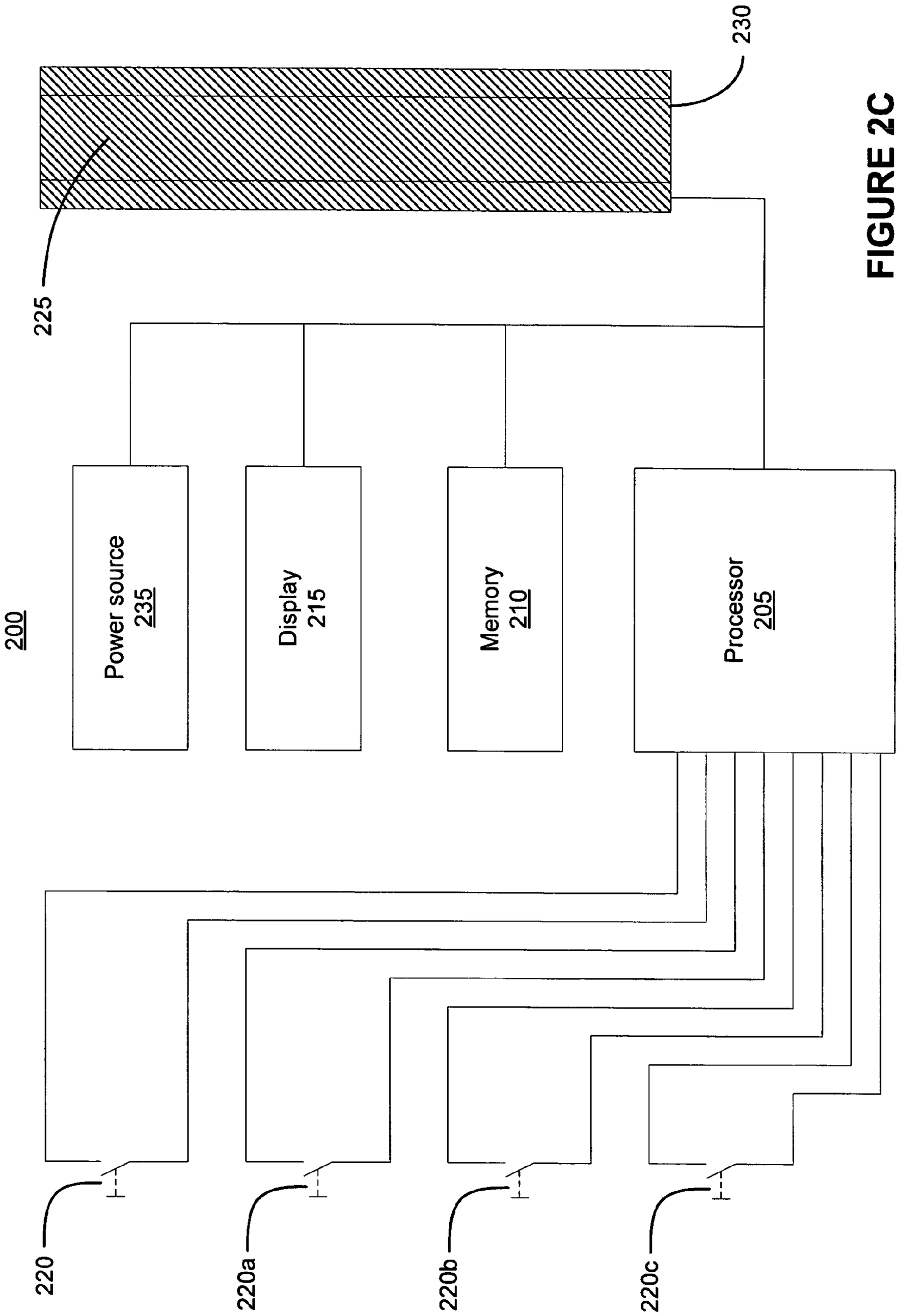
230
225
200
Power source
235
Display
215
Memory
210
Processor
205
220
220a
220b
220c

FIGURE 2C

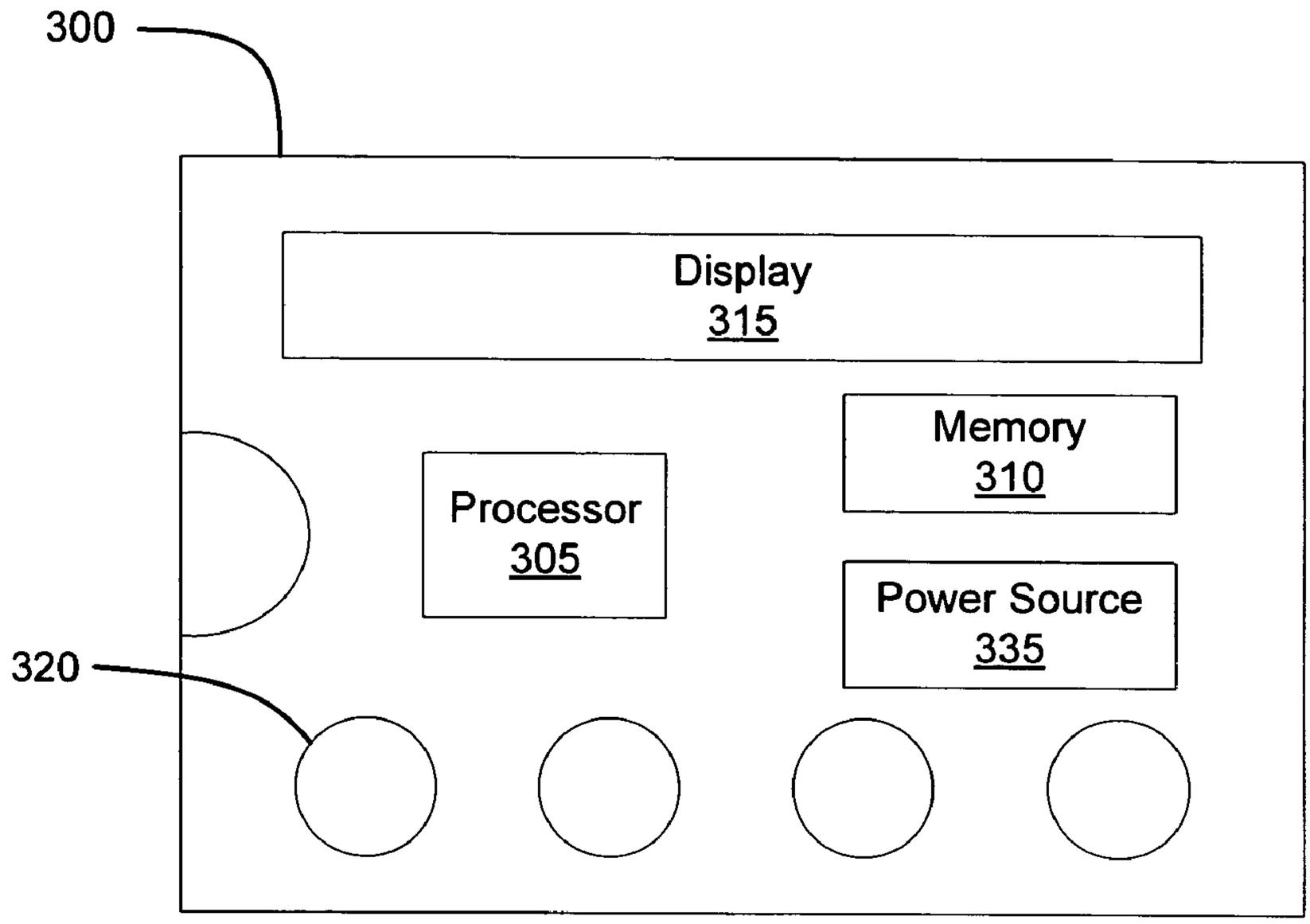

FIGURE 3A

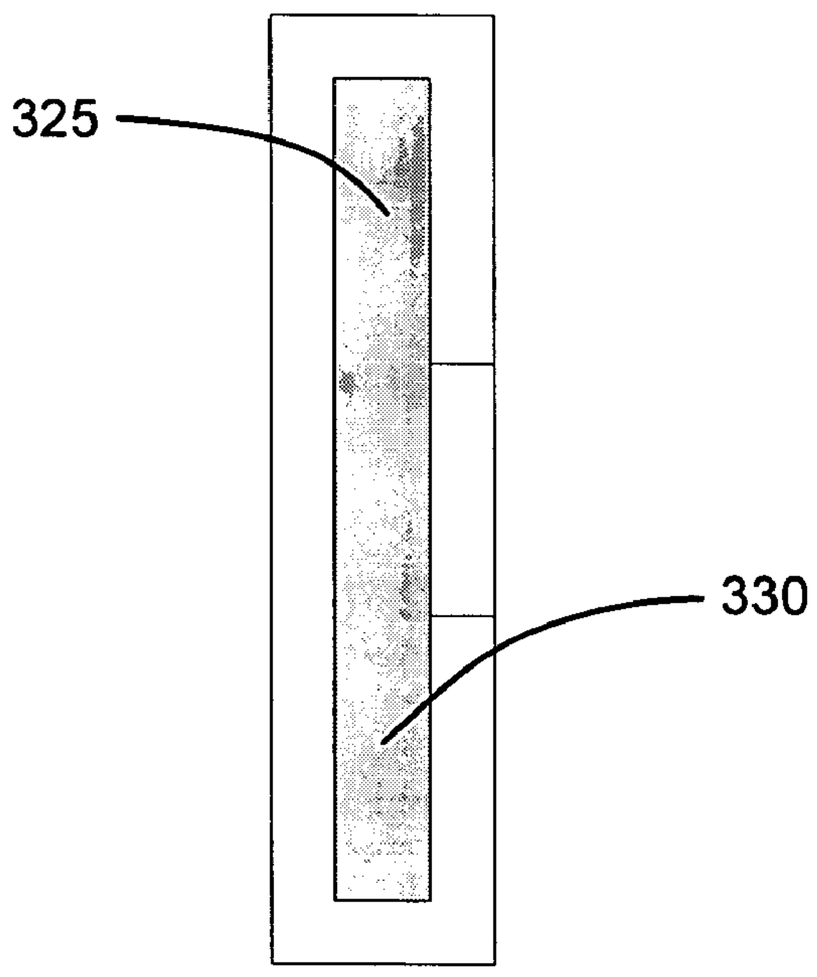

FIGURE 3B

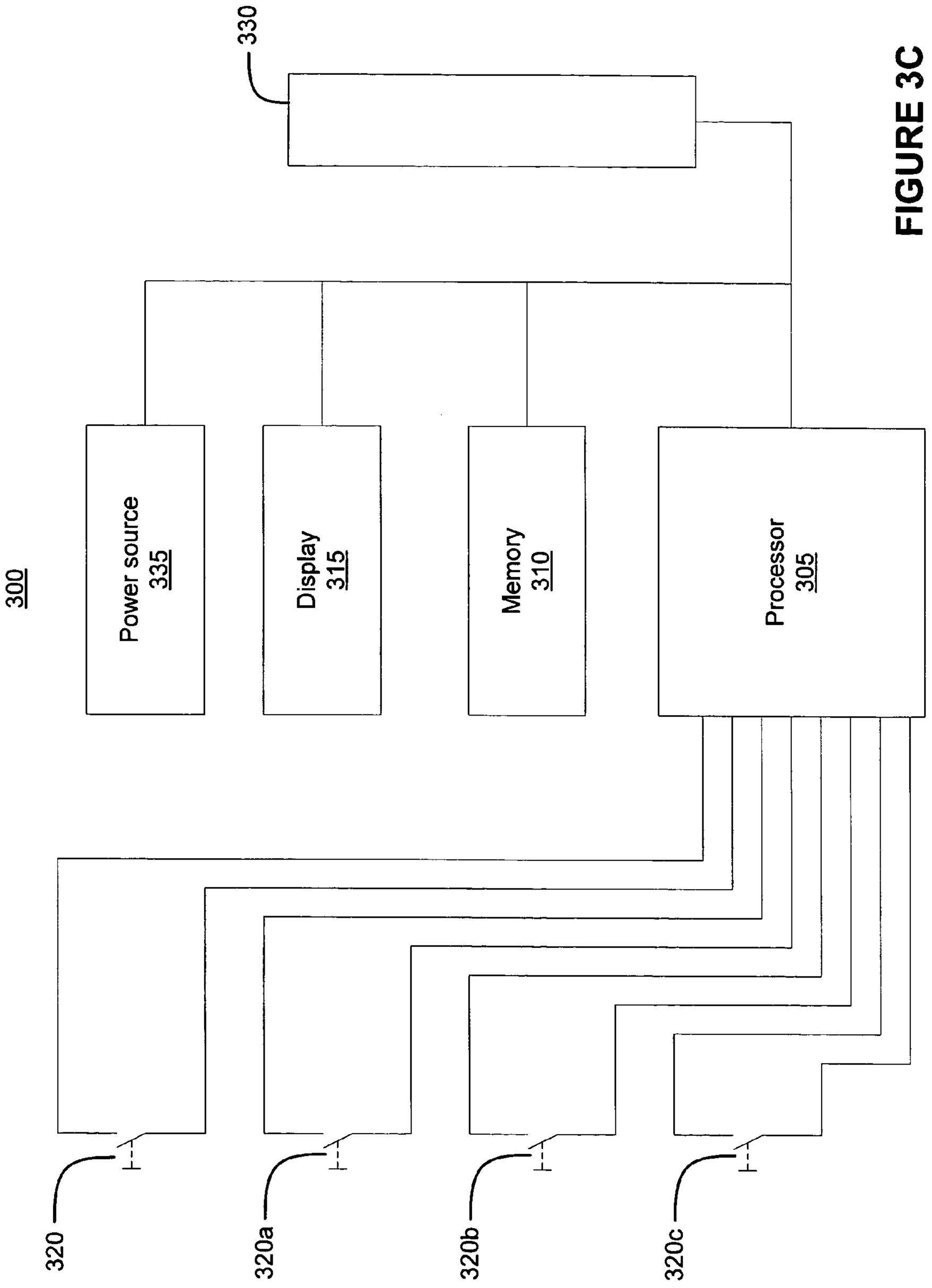
330
300
Power source
335
Display
315
Memory
310
Processor
305
320
320a
320b
320c

FIGURE 3C

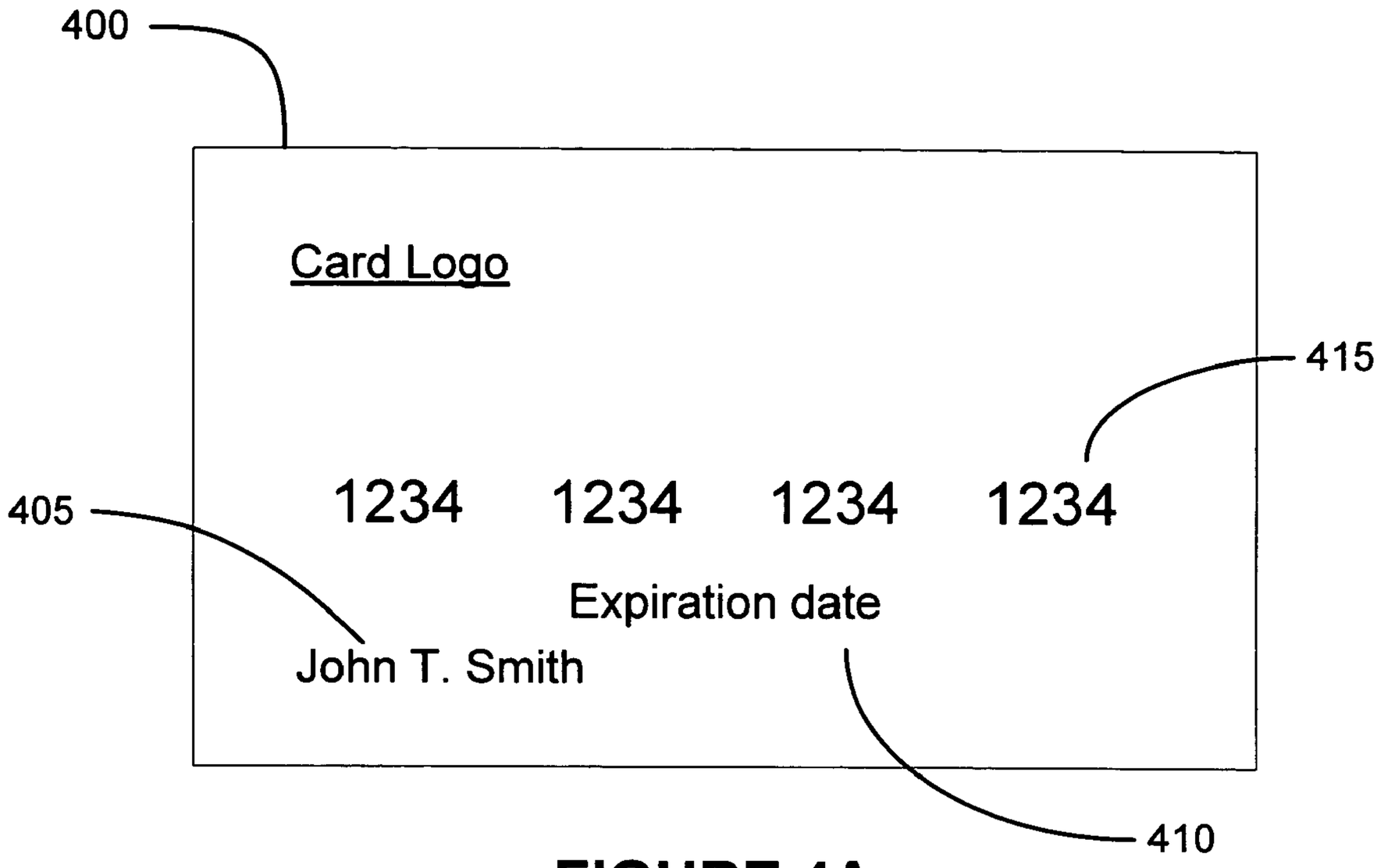

FIGURE 4A

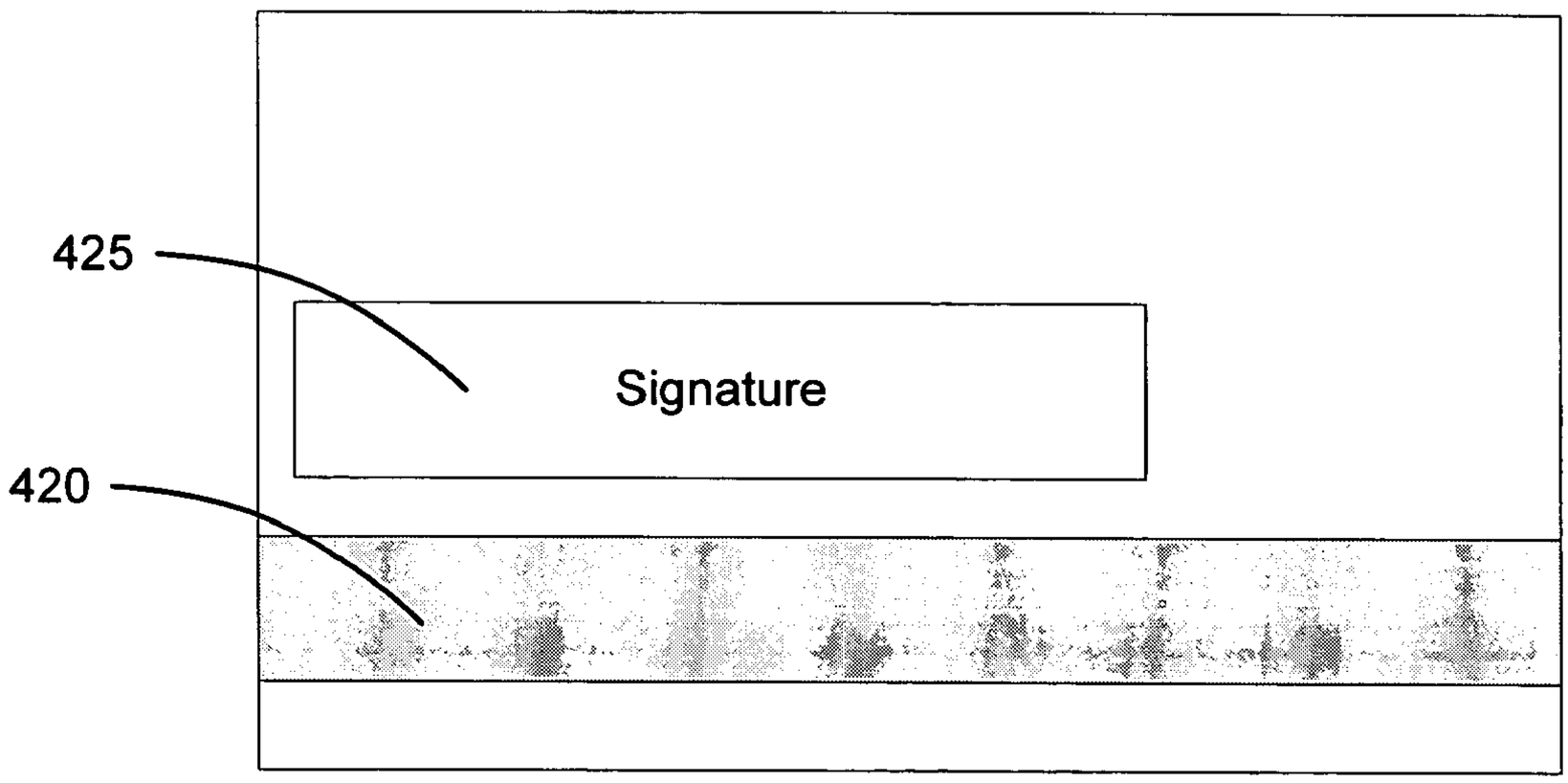

FIGURE 4B

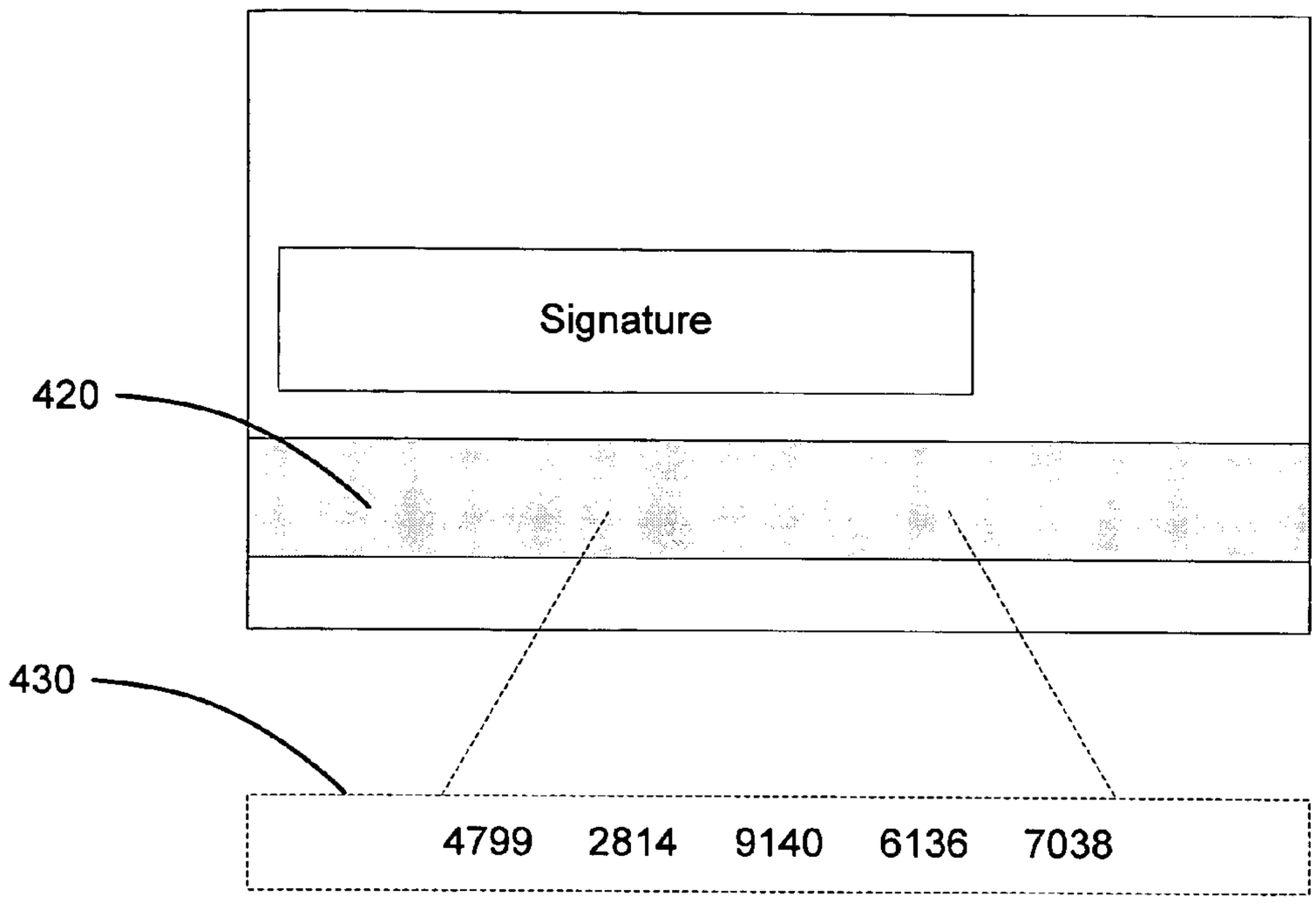

FIGURE 4C

Account 435	4799 2814 **9**140 6136	460
Account 440	4799 2814 **7**140 6136	465
Account 445	4799 2814 **0**140 6136	470
Account 450	4799 2814 **3**140 6136	475
Account 455	4799 2814 **8**140 6136	480

FIGURE 4D

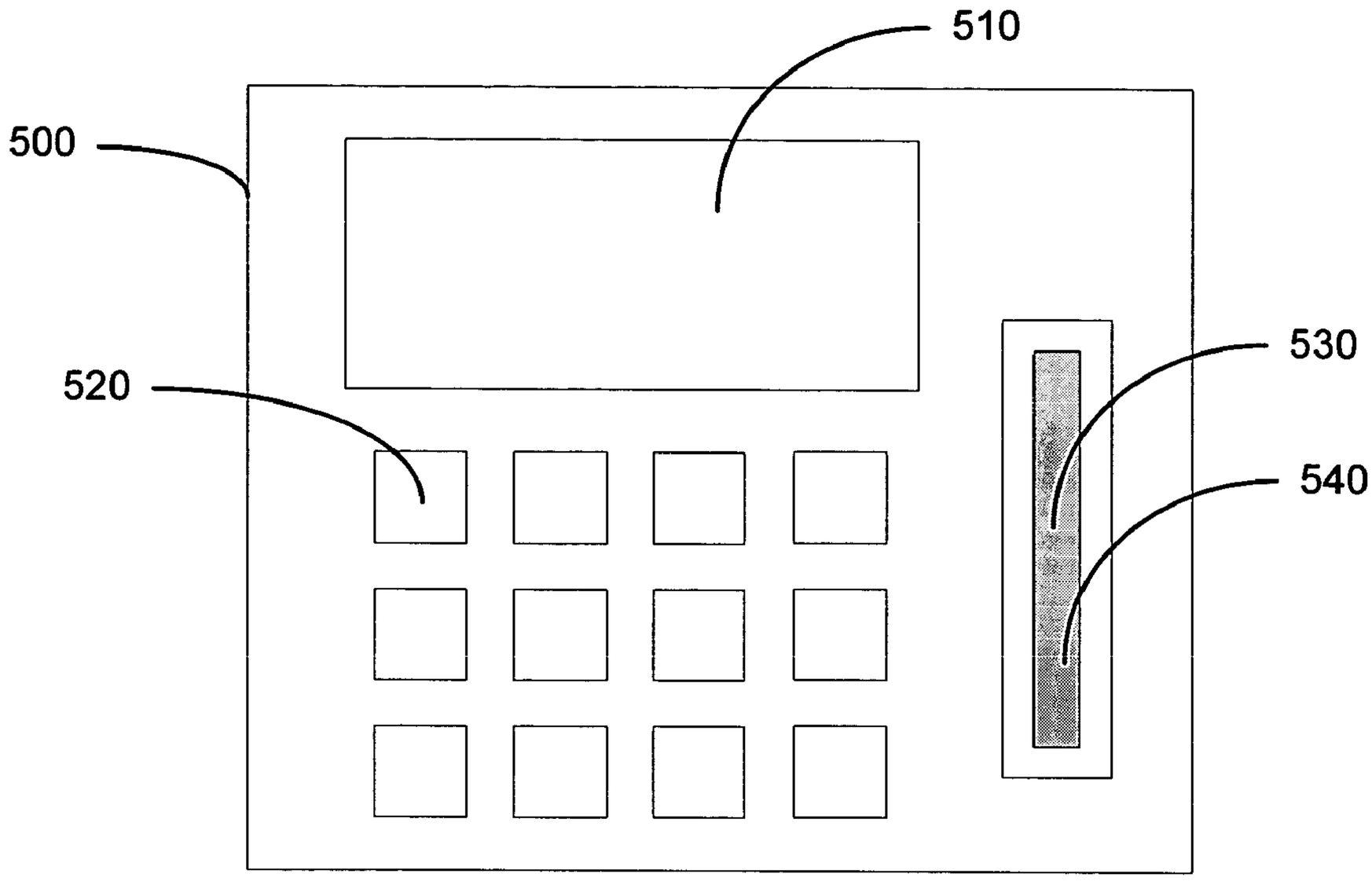

FIGURE 5A

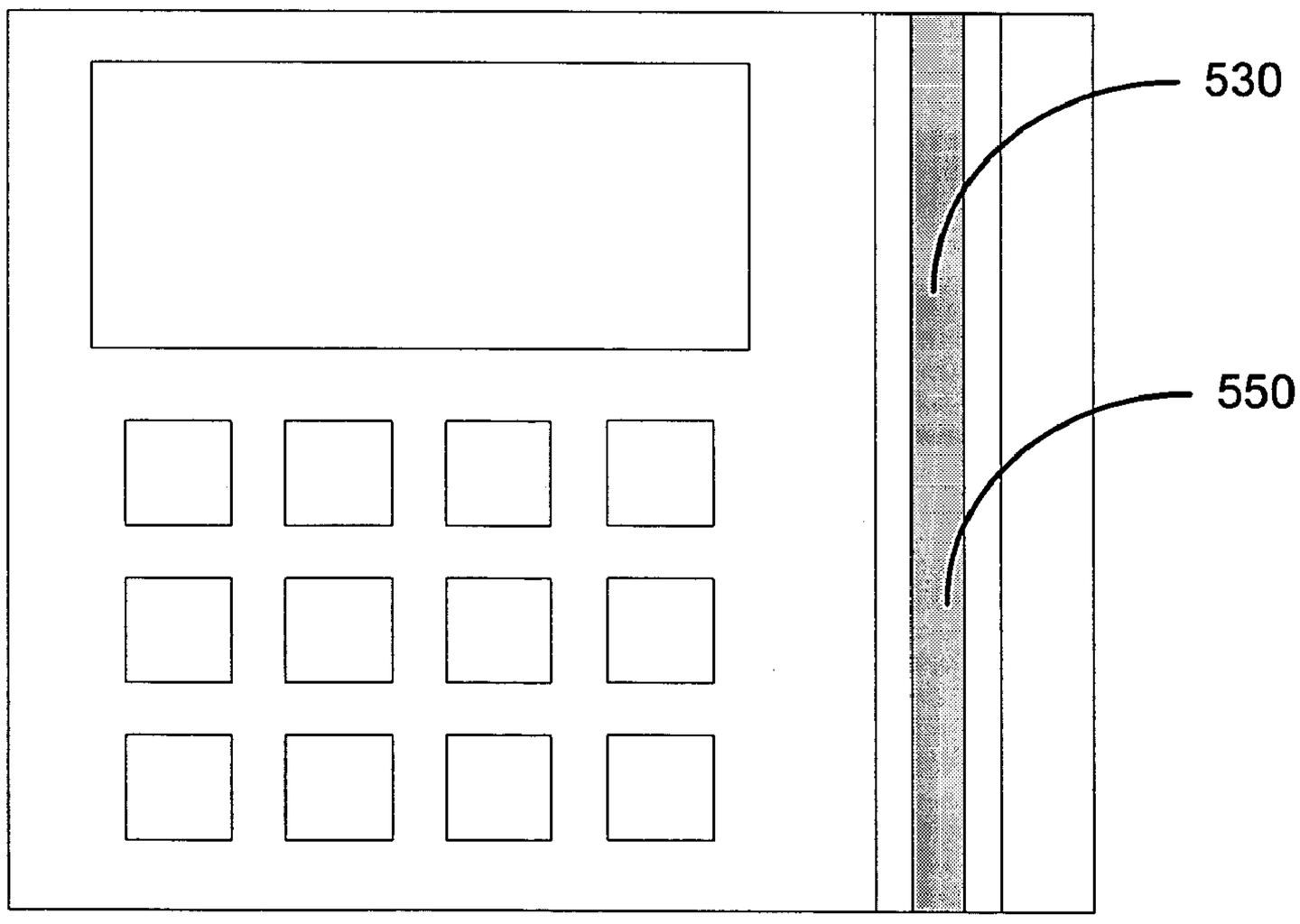

FIGURE 5B

MULTI-ACCOUNT ACCESS CARD

CROSS REFERENCE TO RELATED APPLICATIONS

This application is related by subject matter to the inventions disclosed in the following commonly assigned application, the entirety of which are hereby incorporated by reference herein: U.S. patent application Ser. No. 11/626,179, filed on Jan. 23, 2007; U.S. patent application Ser. No. 11/321,560, filed on Dec. 29, 2005; and U.S. patent application Ser. No. 11/321,974, filed on Dec. 29, 2005, all entitled "Single Access Vehicle."

BACKGROUND

Automated Teller Machine (ATM) cards, credit cards and debits cards typically provide a safe and convenient method for an individual to access cash and purchase goods and/or services. To use an ATM card, for example, the individual typically opens a savings account, checking account, and the like, at a financial institution and deposit funds, which are then available for later withdrawal. To withdraw cash from the account, the individual (i.e., the account owner) typically goes to a conveniently located ATM or other similar machine and inserts the ATM card into the ATM, which may then read the account information stored on a magnetic stripe on the ATM card. The ATM may ask the account owner to enter a personal identification number (PIN) as a security precaution. The account owner may then specify an amount to be withdrawn. The ATM typically verifies the transaction by making sure the PIN is correct and that there are sufficient funds available to complete the transaction. Once the verification is complete, the ATM may dispense the cash to the account owner.

Debit cards may permit an individual to pay for goods and/or services with funds withdrawn directly from an account, such as a savings and/or checking account. Credit cards, on the other hand, may allow the individual to pay for goods and/or services using a line of credit. To use a debit card, the individual usually must open a savings account, checking account, and the like, at a financial institution and deposit funds. The individual (i.e., account owner) may then present the debit card at the point of sale. The debit card may be interfaced with a payment terminal, which may read account information stored on a magnetic stripe on the debit card. Similar to an ATM card, the account owner may be asked to enter a PIN. The payment terminal may then verify the transaction by making sure the PIN is correct and that there are sufficient funds available to complete the transaction. If the transaction is approved, the sale is completed and the funds may be withdrawn from the account.

ATM cards, debit cards, credit cards, and the like are often advantageous because such cards facilitate secure transactions by limiting unauthorized access to funds through the use of certain security features, such as a signature and/or PIN, and by minimizing the amount of cash that an individual must keep on hand. While cash is usually considered the most liquid type of asset, cash may also be the least secure because cash is typically freely transferable. The owner and possessor of cash is most often the same individual. Because cash is freely transferable, cash that is lost or stolen usually cannot be recovered. Therefore, the risks associated with cash transactions are often unacceptable, particularly with respect to transactions not conducted in person (e.g., by mail, over the internet, etc.) and/or involving large sums of money. ATM cards, debit cards and credit cards, on the other hand, often

provide more security. For example, ATM cards enable an account owner to access cash when the account owner needs it. This usually minimizes the amount of cash that the account owner must withdraw and carry at any one time. Debit cards and credit cards, meanwhile, facilitate cashless transactions, which also may minimize the amount of cash that must be carried. In addition, such cards limit access to the funds available in the account by requiring that the account owner's identity be authenticated via a signature and/or PIN. These safeguards help to reduce the risk that cash will be lost and/or stolen.

Cash may have other disadvantages as well. For example, because cash is freely transferable, there may be little or no verifiable transaction history. It is often desirable for a payor (e.g., account owner) and/or payee (e.g., merchant) to have physical proof that a particular transaction took place. This typically requires that the payor receive a receipt. However, receipts may contain errors and can be easily misplaced. In contrast, a financial institution processing a debit card and/or credit card transaction will ordinarily create a transaction history, which may include the identity of the payee, the amount to be paid, the date of the payment, and the signature of the payor. This enables both the payor and payee to independently verify the accuracy of most transactions involving a payment by debit card and/or credit card.

While ATM cards, debit cards and credit cards may provide convenience and security, the proliferation of various types of cards in recent years has forced individuals to carry an ever increasing number of cards. For example, in addition to carrying an ATM card, debit card and credit card, an individual may also carry a driver's license, retailer cards (e.g., cards that provide consumer rewards and/or discounts on purchases at a specific retailer), health insurance cards, employee identification cards, video store cards, and the like. Furthermore, the individual may hold credit accounts with multiple credit card companies, each issuing its own specific card. The large number of cards typically means that individuals can no longer carry, much less keep track of, all the various cards. This has the potential to increase the risk that the cards will be lost and/or stolen. Worse yet, any loss may go undetected by the account owner. This, in turn, may increase the risk that the account owner will become a victim of fraud and/or identity theft.

In addition, a standard system for reading and authenticating card-based transactions has become well established. This is generally beneficial for card holders because it helps to ensure that the same credit card, for example, may be used to purchase a variety a goods and/or services, from a variety of sellers, at a variety of geographical locations. However, this standardization often poses challenges to improving the payment system because any changes may result in cost-prohibitive modifications to the existing card-based payment infrastructure. Thus, it would be advantageous to enable an individual to access multiple accounts without requiring the individual to carry a separate card for each individual account. Furthermore, it would be advantageous to enable convenient access to multiple accounts without requiring significant changes to the existing payment infrastructure.

SUMMARY

The described embodiments contemplate a system, method, apparatus, and computer-readable medium with computer-executable instructions for accessing multiple accounts. In one embodiment, the apparatus may be an interactive access card that includes a memory component for storing data associated with multiple accounts, an input com-

ponent for selecting an account, and a processing component for retrieving second data associated with the selected account. The interactive access card also may include an interface component for enabling access to the data associated with the selected account.

In another embodiment, the apparatus may be a portable electronic device that includes a memory component for storing data associated with multiple accounts, an input component for selecting an account, and a processing component for retrieving second data associated with the selected account. The portable electronic device also may include an encoding component for transferring the data associated with the selected account to an interface component located on an access card.

In another embodiment, the apparatus may be an access card that includes a rectangular shaped substrate and an interface component located on the substrate for storing data associated with multiple accounts. The data may be read by an electronic reader, which may include software for identifying the multiple accounts stored on the access card.

In another embodiment, the apparatus may be an electronic reader that includes an interface component for reading an access card that is capable of storing data associated with multiple accounts, a software component for identifying the accounts stored on the access card, an input component for selecting an account, and a processing component for accessing a database associated with the selected account via a communications network, transmitting second data associated with the selected account, and completing a transaction with the selected account.

This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing summary, as well as the following detailed description of preferred embodiments, is better understood when read in conjunction with the appended drawings. For the purposes of illustration, there is shown in the drawings exemplary embodiments; however, the invention is not limited to the specific methods and instrumentalities disclosed. In the drawings:

FIG. **1** is a diagram illustrating an example system in which aspects of the invention may be incorporated;

FIGS. **2**A and **2**B are diagrams illustrating an interactive access card for accessing more than one account;

FIG. **2**C is a diagram illustrating an implementation of an interactive access card;

FIGS. **3**A and **3**B are diagrams illustrating a portable electronic device for accessing more than one account;

FIG. **3**C is a diagram illustrating an implementation of a portable electronic device for accessing more than one account;

FIGS. **4**A and **4**B are diagrams illustrating an access card for accessing more than one account;

FIG. **4**C is a diagram illustrating an implementation of an access card for accessing more than one account;

FIG. **4**D is a diagram illustrating an example method of mapping a number sequence to accounts stored on an access card; and

FIGS. **5**A and **5**B are diagrams illustrating an electronic reader for accessing more than one account.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

The subject matter of the present invention is described with specificity to meet statutory requirements. However, the description itself is not intended to limit the scope of this patent. Rather, the inventors have contemplated that the claimed subject matter might also be embodied in other ways, to include different steps or elements similar to the ones described in this document, in conjunction with other present or future technologies. Moreover, although the term "step" may be used herein to connote different aspects of methods employed, the term should not be interpreted as implying any particular order among or between various steps herein disclosed unless and except when the order of individual steps is explicitly described.

FIG. **1** illustrates an example system in which the present invention may be employed. Of course, actual network and database environments may be arranged in a variety of configurations; however, the example environment shown here provides a framework for understanding the type of environment in which an embodiment may operate.

As shown in FIG. **1**, system **190** may include access card **100**, terminal **110**, network **120**, server computers **130**, **150** and **170** and databases **140**, **160** and **180**. An account owner (not shown) may present access card **100** to terminal **110** in order to complete a transaction and/or withdraw money. Access card **100** may include any type of card capable of storing account information. The account information may be stored on a magnetic stripe, for example. The account information may enable the account owner to withdraw cash and/or complete a transaction using funds from the account. Terminal **110** may include any type of electronic reader that is capable of reading account information on access card **100** and processing the transaction. For example, terminal **100** may include an automated teller machine (ATM) and/or electronic reader located at a point-of-sale (e.g., the checkout counter). Terminal **100** may read and send the account information, which may consist of an account number, name of account owner, bank number and/or expiration date, to server computers **130**, **150** and/or **170** via network **120**, which may include an intranet, the Internet, a local area network (LAN), a wide area network (WAN), a public switched telephone network (PSTN), a cellular network, a radio network, and the like. Server computers **130**, **150** and **170** may be owned and/or operated by the owner of terminal **110** (e.g., a bank) or by an acquirer. An acquirer usually is an organization that collects card-based transaction requests and facilitates the authentication process.

Server computer **150** may authenticate the transaction by accessing database **160**. Server computer **150** may provide management of database **160** by way of database server system software. As such, server computer **150** may act as a storehouse of data from a variety of data sources and provides that data to a variety of data consumers. Additionally, server computer **150** may authenticate the transaction by accessing server computers **130** and **170** via network **120**. Server computer **150** may authenticate the transaction by validating information such as a merchant identification number, an account number, a personal identification number, a bank number, a card expiration date, an account limit, and the like. Once the transaction is authenticated, server computer **150** may send a notice to terminal **110** approving the transaction.

It will be appreciated that the preceding examples are for purposes of illustration and explanation only, and that an embodiment is not limited to such examples. For example, server computer **150** is not limited to database **160** but may be

connected to numerous databases, each containing various types of information. Furthermore, terminal **110** may process the transaction by communicating with other servers, such as server computers **130** and/or **170**.

FIGS. **2**A and **2**B illustrate an interactive access card for accessing more than one account. As shown in FIG. **2**A, one side of interactive access card **200** is depicted. Interactive access card **200** may consist of a rectangular shaped substrate. In addition, interactive access card **200** may include processor **205**, memory **210**, display **215**, input device **220** and a system bus (not shown). As shown in FIG. **2**B, an opposite side of interactive access card **200** is depicted. Interactive access card **200** also may include interface device **225**, encoding device **230**, power source **235**, and signature field **240**.

Processor **205** may include any appropriate processor capable of accessing, executing, and/or transferring data associated with a selected account. The system bus may couple various system components including processor **205** to memory **210**, display **215**, interface device **225**, encoding device **230** and power source **235**. The system bus may be any of several types of bus structures including a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures. By way of example, and not limitation, such architectures include Industry Standard Architecture (ISA) bus, Micro Channel Architecture (MCA) bus, Enhanced ISA (EISA) bus, Video Electronics Standards Association (VESA) local bus, and Peripheral Component Interconnect (PCI) bus (also known as Mezzanine bus).

Memory **210** may include computer storage media in the form of volatile and/or nonvolatile memory such as read only memory (ROM) and random access memory (RAM). A basic input/output system (BIOS), containing the basic routines that help to transfer information between elements within interactive access card **200** is typically stored in ROM. RAM typically contains data (e.g., data associated with the selected account) and/or program modules that are immediately accessible to and/or presently being operated on by processor **205**.

Display **215** may include any appropriate display device for rendering video, images and/or text. For example, display **120** may include a liquid crystal display (LCD), a plasma display, a light emitting diode (LED) display, and the like. Input device **220** may include any type of device for inputting information, such as a keypad, contact and/or button, and may correspond to numbers, letters, symbols, and the like. Input device may enable an account owner to select accounts and/or input other information such as a personal identification number. Power source **235** may include any component capable of supplying DC power to processor **205**, memory **210**, display, **215**, interface device **225** and encoding device **230**. For example, power source **235** may include a DC battery and/or photovoltaic solar cells. In addition, power source **235** may include passive components, such as a wire capable of inducing a voltage when passed through a magnetic field.

Interface device **225** may be any appropriate device for enabling access to data associated with a selected account. For example, interface device **225** may include a magnetic stripe. The magnetic stripe is often made up of iron-based magnetic particles embedded in a plastic-like film. Each particle may include a bar magnet that typically reaches approximately twenty-millionths of an inch in length. Data may be encoded on the magnetic stripe by magnetizing the bar magnets such that the bar magnets are oriented in either a north or south direction. The bar magnets may be magnetized via encoding device **230**. Encoding device **230** may include an electromagnetic writer for applying a magnetic flux to the magnetic stripe. As the magnetic flux is applied to the stripe, the corresponding bar magnets assume either a north or south orientation. Once the magnetic flux is removed, the bar magnets usually retain their orientation. This is just one example of encoding data on the magnetic stripe. Other methods may be employed while remaining consistent with an embodiment.

The magnetic stripe may include three tracks, each about one-tenth of an inch in height. Data is typically encoded onto each track according to International Organization for Standardization (ISO) standard 7811. For example, track **1** may have a recording density of 210 bits per inch (bpi) and store up to 79 alphanumeric characters. Track **2** may have a recording density of 75 bpi and store up to 40 numeric characters. Track **3** may have a recording density of 210 bpi and store up to 107 characters.

Interface device **225** also may include a radio frequency (RF) emitter, such as a radio frequency identification (RFID) chip. Processor **205** may be in communication with and transfer data to the RFID chip. The RFID chip may encrypt and emit the data at a predetermined frequency. The data may then be received by any terminal capable of receiving the data at the predetermined frequency when interactive access card **200** is within a predetermined range of the terminal. It will be appreciated that the data may be emitted at any frequency and at any range while remaining consistent with an embodiment.

FIG. **2**C illustrates an implementation of interactive access card **200**. Input devices **220**-**220***c* may be coupled to processor **205**. Processor **205**, in turn, may be coupled to memory **210**, display device **215**, interface device **225**, encoding device **230** and power source **235**. In one embodiment, an account owner may wish to complete a transaction using a specific account stored in memory **210**. Memory **210** may store data associated with multiple accounts, such as a savings account, checking account and/or credit card account. The stored data may include account numbers, bank numbers, type of accounts, name of the account owner(s) and expiration dates. The account owner may select the account using at least one of input devices **220**-**220***c*. A signal may be sent to processor **205**, which may retrieve data associated with the selected account from memory **210**. Processor **205** may then send a signal to display device **215** to display some or all of the data to identify the selected account to the account owner. Processor **205** also may transfer the data to interface device **225**. For example, if interface device **225** includes a magnetic stripe, processor **205** may instruct encoding device **230** to apply a magnetic flux to the magnetic stripe, thereby encoding the data associated with the selected account. If interface device **225** includes an RFID chip, the transferred data may be encrypted and emitted at a predetermined frequency.

Once the data associated with the selected account has been transferred to interface device **225**, the account owner may present interactive access card **200** to any terminal capable of processing the transaction. It will be appreciated that by transferring specific account information to interface device **225** prior to completing a transaction, interactive access card **200** may be compatible with most existing terminals. For example, if the account owner wishes to withdraw cash from a savings account, the account owner may select the savings account using input devices **220**-**220***c*. As noted above, data associated with the savings account may be displayed and/or transferred to interface device **225**. The account owner may then present interactive access card **200** to any terminal capable of executing the withdrawal, such as an automated teller machine (ATM). The ATM may read and/or receive the data on interactive access card **200** and request that the account owner enter a personal identification number (PIN). The ATM may authenticate the transaction by sending

the data associated with the savings account and PIN to a database and/or service provider (e.g., an acquirer) via a communications network. Once the transaction has been authenticated, the ATM may be instructed to dispense the appropriate amount of cash to the account owner.

In another embodiment, interactive access card **200** may include security features that prevent unauthorized individuals from using the card. For example, prior to using interactive access card **200**, a user may be required to input a personal identifier, such as password, PIN, biometric information, and the like. A biometric identification system accepts unique biometric information from a user (e.g., fingerprint, iris scan, etc.) and identifies the user by matching the information against information belonging to registered users of the system. If the user of interactive access card **200** is unable to input the proper identifier, processor **205** may not transfer data to interface device **225**.

In addition, processor **205** may include software instructions for erasing data currently encoded and/or stored on interface device **225**. For example, processor **205** may include software instructions for erasing data periodically (e.g., thirty minutes after an account has been selected and encoded onto interface device **225**, every twenty-four hours, etc.) and/or after a predetermined number of unauthorized access attempts have occurred. Processor **205** also may include software instructions for erasing data upon receiving a request from the user via input devices **220-220***c*. Thus, the user (e.g., account owner) may be able to select and use an account to complete a transaction but the account information may remain on interface device **225** only for a finite period of time, thereby significantly reducing the possibility that the card could be used for fraudulent purposes if the card were lost and/or stolen.

It will be appreciated that the preceding examples are for purposes of illustration and explanation only, and that an embodiment is not limited to such examples. For example, interactive access card **200** may not have display **215**. Furthermore, interactive access card **200** may include more than one type of interface device on a single card (e.g., may include both a magnetic stripe and a RF emitter). Thus, interactive access card **200** may be used at terminals capable of reading data encoded on a magnetic stripe, terminals capable of receiving data via an RF transmission, and/or terminals capable of both.

FIGS. **3**A and **3**B illustrate a portable electronic device for accessing more than one account. As shown in FIG. **3**A, one side of portable electronic device **300** is depicted. Portable electronic device **300** may include processor **305**, memory **310**, display device **315** and input **320**. As shown in FIG. **3**B, a side view of portable electronic device **300** is depicted. Portable electronic device **300** may include slot **325** for receiving common types of access cards, such as ATM and/or credit cards, and encoding device **330** for encoding data associated with a selected account onto a interface component located on the access card.

FIG. **3**C illustrates an implementation of portable electronic device **300**. Input devices **320-320***c* may be coupled to processor **305**. Processor **305**, in turn, may be coupled to memory **310**, display device **315**, encoding device **330** and power source **335**. In one embodiment, an account owner may wish to complete a transaction using a specific account stored in memory **310**. Memory **310** may store data associated with multiple accounts, such as a savings account, checking account and credit card account. The stored data may include account numbers, bank numbers, type of accounts, name of the account owner(s) and expiration dates. The account owner may select the account using at least one of input devices **320-320***c*. A signal may be sent to processor **305**, which may retrieve data associated with the selected account from memory **310**. Processor **305** may then send a signal to display device **315** to display some or all of the data to identify the selected account to the account owner. Processor **305** also may transfer the data to an interface device located on an access card using encoding device **330**.

Once the data associated with the selected account has been encoded onto the interface device of the access card, the account owner may present the access card to any terminal capable of processing the transaction. For example, if the account owner wishes to purchase goods using a credit card account, the account owner may insert the access card into slot **325** and select the credit card account using input devices **320-320***c* on portable electronic device **300**. As noted above, data associated with the credit card account may be displayed on display device **315** and/or encoded onto the interface device of the access card. The account owner may then present the access card to any terminal capable of completing the transaction, such as an electronic reader at a merchant's checkout counter. The electronic reader may read the encoded data on the access card and authenticate the transaction by sending the data associated with the credit card account to a database and/or service provider (e.g., an acquirer) via a communications network. Once the transaction has been authenticated, the electronic reader may instruct a person (e.g., a cashier) and/or a machine (e.g., a cash register) to complete the transaction.

Portable electronic device **300** also may include security features for preventing unauthorized individuals from using the device. Such features may be the same and/or similar to the security features noted above. For example, a user may be required to input a personal identifier, such as password, PIN, biometric information, and the like before using portable electronic device **300**. It will also be appreciated that portable electronic device **300** may be compatible with access cards utilizing more than one type of interface device, such as access cards with both a magnetic stripe and a RF emitter.

FIGS. **4**A and **4**B illustrate an access card for accessing more than one account. As shown in FIG. **4**A, one side of access card **400** is depicted. Access card **400** may consist of a rectangular shaped substrate and may include name of account owner **405**, expiration date **410**, and account number **415**. As shown in FIG. **4**B, an opposite side of access card **400** is depicted. Access card **400** also may include interface device **420** and signature field **425**. As noted above, interface device **420** may include a magnetic stripe, RF emitter, and the like.

Account number **415** typically consists of a sixteen digit number. A single digit or a group of digits may correspond to certain information. For example, the first digit may refer to a processing system. In other words, the numbers 3, 4, 5, and 6 may refer to American Express®, Visa®, MasterCard® and Discover®, respectively. The digits corresponding to the account number may vary according to the system being used. For example, if the first digit is the number 4 (i.e., Visa®), digits seven through fifteen may represent the account number. If the first digit is the number 3 (i.e., American Express®), digits five through 11 may represent the account number.

FIG. **4**C illustrates an implementation of access card **400**. Access card **400** may include a series of characters (e.g., numbers, letters, symbols, etc.) encoded and/stored on interface device **420**. The characters may be associated with more than one account. For example, as shown in FIG. **4**C, interface device **420** may store, among other things, information representative of number sequence **430**, which may consist of a twenty-digit sequence. The first sixteen digits may corre-

spond to number sequence **460**, which may in turn correspond to account **435**. Each of the remaining digits of number sequence **430** (i.e., the numbers 7038) may be used to replace the ninth digit of account **435** (i.e., the number 9) to form number sequences **465**, **470**, **475** and **480**, which may correspond to accounts **440**, **445**, **450** and **455**, respectively. For example, number sequence **465** may be identified by replacing the ninth digit of account **435** (i.e., the number 9) with the number 7. Accounts **435**, **440**, **445**, **450** and **455** may represent any type of account, such as a savings account, checking account, credit card account, and the like. FIG. **4**D illustrates an example method of mapping number sequence **430** to accounts **435**, **440**, **445**, **450** and **455**.

In an embodiment, an account owner may wish to complete a transaction using a specific account stored on access card **400**. For example, if the account owner wishes to purchase goods using a credit card account, the account owner may interface access card **400** with a terminal located at the point of sale (e.g., a electronic reader at the merchant's checkout counter). The terminal may read and/or receive the data on access card **400** and identify the multiple accounts using the method outlined in FIG. **4**D, for example. The payment terminal may then display the multiple accounts (e.g., by account number, by type of account, by name of account, etc.) and provide the account owner the opportunity to select one of the accounts. Once the account owner has selected the credit card account, the terminal may authenticate the transaction by sending the data associated with the credit card account to a database and/or service provider (e.g., an acquirer) via a communications network. Once the transaction has been authenticated, the terminal may instruct a person (e.g., a cashier) and/or a machine (e.g., a cash register) to complete the transaction.

It will be appreciated that the preceding examples are for purposes of illustration and explanation only, and that an embodiment is not limited to such examples. For example, number sequence **430** may include any number of characters (e.g., numbers, letters, symbols, etc.) and may correspond to any number and/or any type of account. Furthermore, any method of deciphering number sequence **430** to identify multiple accounts is consistent with an embodiment.

FIGS. **5**A and **5**B illustrates an electronic reader for accessing more than one account. As shown in FIG. **5**A, electronic reader **500** may include display **510**, input device **520** and interface component **530**. Interface component **530** may include a magnetic stripe reader for reading data encoded on a magnetic stripe located on an access card. In addition, interface component **530** may include a device for receiving data via a RF transmission. Thus, data stored on the access card may be read in a variety of ways. For example, the access card may be read by inserting the card into slot **540**, which may house interface component **530**. As shown in FIG. **5**B, the access card also may be read by swiping the card through slot **550**, which may house interface component **530**. The access card also may be read by placing the card within a predetermined range of the electronic reader such that the RF transmission may be received.

Electronic reader **500** also may include software instructions (not shown) for deciphering and identifying multiple accounts stored on the access card. The access card may store various types of accounts, such as a savings account, checking account, credit card account, and the like. The software instructions may consist of an algorithm for deciphering an number sequence, which may correspond to multiple accounts stored on the card. FIGS. **4**C and **4**D illustrate one example in which the data may be deciphered by electronic reader **500**.

In one embodiment, an account owner may wish to complete a transaction using a specific account encoded and/or stored on the access card. For example, if the account owner wishes to purchase goods using a credit card account, the account owner may interface the access card with electronic reader **500**, which typically is located at the point of sale (e.g., at the merchant's checkout counter). Electronic reader **500** may read the data on the access card and identify the multiple accounts using the method outlined in FIG. **4**D, for example. Electronic reader **500** may then display the multiple accounts (e.g., by account number, by type of account, by name of account, etc.) and provide the account owner the opportunity to select one of the accounts. Electronic reader **500** also may request that the account owner input a personal identifier, such as a password, PIN, signature and/or biometric. Once the account owner has selected the credit card account and/or inputted the personal identifier, electronic reader **500** may authenticate the transaction by sending the data associated with the credit card account (e.g., account number, bank number, name of the account owner, expiration date of the card, PIN, etc.) to a database and/or service provider (e.g., an acquirer) via a communications network. Once the transaction has been authenticated, electronic reader **500** may instruct a person (e.g., a cashier) and/or a machine (e.g., a cash register) to complete the transaction.

The various techniques described herein may be implemented with hardware or software or, where appropriate, with a combination of both. Thus, the methods and apparatus of the disclosed embodiments, or certain aspects or portions thereof, may take the form of program code (i.e., instructions) embodied in tangible media, such as floppy diskettes, CD-ROMs, hard drives, or any other machine-readable storage medium, wherein, when the program code is loaded into and executed by a machine, such as a computer, the machine becomes an apparatus for practicing the invention. In the case of program code execution on programmable computers, the computer will generally include a processor, a storage medium readable by the processor (including volatile and non-volatile memory and/or storage elements), at least one input device and at least one output device. One or more programs are preferably implemented in a high level procedural or object oriented programming language to communicate with a computer system. However, the program(s) can be implemented in assembly or machine language, if desired. In any case, the language may be a compiled or interpreted language, and combined with hardware implementations.

The described methods and apparatus may also be embodied in the form of program code that is transmitted over some transmission medium, such as over electrical wiring or cabling, through fiber optics, or via any other form of transmission, wherein, when the program code is received and loaded into and executed by a machine, such as an EPROM, a gate array, a programmable logic device (PLD), a client computer, a video recorder or the like, the machine becomes an apparatus for practicing the invention. When implemented on a general-purpose processor, the program code combines with the processor to provide a unique apparatus that operates to perform the processing of the present invention.

While the embodiments have been described in connection with the preferred embodiments of the various figures, it is to be understood that other similar embodiments may be used or modifications and additions may be made to the described embodiment for performing the same function without deviating therefrom. Therefore, the disclosed embodiments should not be limited to any single embodiment, but rather should be construed in breadth and scope in accordance with the appended claims.

What is claimed is:

1. An access card for storing a plurality of accounts, the access card comprising:

a substrate comprising a first side and a second side; and

a magnetic stripe disposed on the first side of the substrate,

wherein the magnetic stripe is configured to simultaneously store data corresponding to the plurality of accounts, the data being a first series of characters that map, when uncompressed, to a plurality of series of characters corresponding to the plurality of accounts, and

wherein the magnetic stripe is configured to interface with an electronic reader to enable the electronic reader to access the data stored on the magnetic stripe.

2. The access card of claim **1**, wherein each of the plurality of accounts stored on the magnetic stripe is selectable via the electronic reader.

3. The access card of claim **1**, wherein the electronic reader comprises software instructions for deciphering the plurality of accounts stored on the magnetic stripe.

4. The access card of claim **1**, wherein the data comprises numbers identifying each of the plurality of accounts.

5. The access card of claim **4**, wherein the numbers correspond to account numbers associated with the plurality of accounts.

6. The access card of claim **1**, wherein the characters comprise at least one of a number, a letter, or a symbol.

7. A method for storing a plurality of accounts, the method comprising:

creating an access card comprising a substrate that includes a first side and a second side;

disposing a magnetic stripe on the first side of the substrate; and

simultaneously storing data corresponding to the plurality of accounts on the magnetic stripe,

wherein the data comprises a first series of characters that map, when uncompressed, to a plurality of series of characters corresponding to the plurality of accounts,

wherein the magnetic stripe is configured to interface with an electronic reader to enable the electronic reader to access the data stored on the magnetic stripe.

8. The method of claim **7**, wherein each of the plurality of accounts stored on the magnetic stripe is selectable via the electronic reader.

9. The method of claim **7**, wherein the electronic reader comprises software instructions for deciphering the plurality of accounts stored on the magnetic stripe.

10. The method of claim of **7**, wherein the data comprises numbers identifying each of the plurality of accounts.

11. The method of claim **10**, wherein the numbers correspond to account numbers associated with the plurality of accounts.

12. The method of claim **7**, wherein the characters comprise at least one of a number, a letter, or a symbol.

13. A system for accessing a plurality of accounts, wherein the system comprises at least one subsystem that:

interfaces an access card, wherein the access card comprises a magnetic stripe for simultaneously storing data corresponding to the plurality of accounts, wherein the data is a first series of characters that map, when uncompressed, to a plurality of series of characters corresponding to the plurality of accounts, and wherein the magnetic stripe is configured to interface with an electronic reader to enable the electronic reader to access the data stored on the magnetic stripe;

selects one of the plurality of accounts stored on the magnetic stripe; and

completes a transaction with the selected account.

14. The system of claim **13**, wherein each of the plurality of accounts stored on the magnetic stripe is selectable via the electronic reader.

15. The system of claim **14**, wherein the electronic reader comprises software instructions for deciphering the plurality of accounts stored on the magnetic stripe.

16. The system of claim **13**, wherein the data comprises numbers identifying each of the plurality of accounts, and wherein the numbers correspond to account numbers associated with the plurality of accounts.

17. The system of claim **13**, wherein the characters comprise at least one of a number, a letter, or a symbol.

18. An access card for storing a plurality of accounts, the access card comprising:

a substrate comprising a first side and a second side; and

a radio frequency identification (RFID) chip disposed on the substrate,

wherein the RFID chip is configured to simultaneously store data corresponding to the plurality of accounts, wherein the data is a first series of characters that map, when uncompressed, to a plurality of series of characters corresponding to the plurality of accounts, and

wherein the RFID chip is configured to interface with an electronic reader to enable the electronic reader to access the data stored on the RFID chip.

19. The access card of claim **18**, wherein each of the plurality of accounts stored on the RFID chip is selectable via the electronic reader.

20. The access card of claim **18**, wherein the electronic reader comprises software instructions for deciphering the plurality of accounts stored on the RFID chip.

21. The access card of claim **18**, wherein the data comprises numbers identifying each of the plurality of accounts.

22. The access card of claim **18**, wherein the characters correspond to account numbers associated with the plurality of accounts.

23. The access card of claim **18**, wherein the characters comprise at least one of a number, a letter, or a symbol.

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